**Grade 12 Biology, University Prep, with respect to Recent Relevant Discoveries in Biochemistry**

Big Ideas

***Biochemistry***

Technological applications that affect biological processes and cellular functions are used in the food, pharmaceutical, and medical industries.

Biological molecules and their chemical properties affect cellular processes and biochemical reactions.

Biochemical compounds play important structural and functional roles in cells of all living organisms.

Overall Expectations

By the end of this course, students will:

**B1.** analyse technological applications of enzymes in some industrial processes, and **evaluate**

**technological advances in the field of cellular biology;**

**B2.** investigate the chemical structures, functions, and chemical properties of biological

molecules involved in some common cellular processes and biochemical reactions;

**B3.** **demonstrate an understanding of the structures and functions of biological molecules**, and the biochemical reactions required to maintain normal cellular function.

Specific Expectations

**B1. Relating Science to Technology,Society, and the Environment**

**B1.2** evaluate, on the basis of research, some advances in cellular biology and related

technological applications (e.g., new treatments for cancer, HIV/AIDS, and hepatitis C; radioisotopic labelling to study the function of internal organs; **fluorescence** to study genetic material within cells; forensic **biological techniques** to aid in crime resolution) [IP, PR, AI, C]

**B3.** Understanding Basic Concepts

B3.2 describe the structure of important biochemical compounds, including carbohydrates,

**proteins**, lipids, and nucleic acids, and **explain their function within cells**

**A. Scientific Investigation Skills and Career Exploration**

Overall Expectations

Throughout this course, students will:

**A1.** demonstrate scientific investigation skills (related to both inquiry and research) in the four areas of skills (initiating and planning, performing and recording, **analysing and interpreting, and communicating);**

**A2.** **identify and describe careers related to the fields of science under study**, and describe **contributions of scientists**, including Canadians, to those fields.

Specific Expectations

**A1. Scientific Investigation S**kills

Throughout this course, students will:

**A1.3 identify and locate a variety of print and electronic sources that enable them to address research topics fully and appropriately**

**A1.7 select, organize, and record relevant information on research topics from a variety of**

**appropriate sources, including electronic, print, and/or human sources, using suitable formats and an accepted form of academic documentation**

*Analysing and Interpreting [AI]\**

**A1.9 analyse the information gathered from research sources for logic, accuracy, reliability, adequacy, and bias**

*Communicating [C]\**

**A1.11 communicate ideas, plans, procedures, results, and conclusions orally, in writing, and/or in electronic presentations, using appropriate language and a variety of formats (e.g., data tables, laboratory reports, presentations, debates, simulations, models)**